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Evolution of Accounting Standards, Why and How? An Institutional Perspective*

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1. Introduction

The aim of this paper is to demonstrate the formation process of accounting institutions and the possibilities that exist for them to evolve. In this paper, accounting is considered an “institution” and the discussion is based on the concept and approach of comparative institutional analysis (CIA)¹. In addition to accounting standards, this investigation also looks at the rules—in a broader sense—that regulate company actions. While I will use U.S. examples, I will also refer to the International Accounting Standards Board (IASB) and Japanese cases where necessary.

This investigation is primarily based on the following two questions. First, in recent years, why have we so often observed the setting of accounting rules that are not in keeping with the empirical evidence demonstrated in “archival studies”?² (Research Question 1) Second, if these accounting rules are not based on facts that have been demonstrated in the form of empirical evidence, then what has determined this rulemaking? (Research Question 2) In the following sections, I will attempt to answer these two questions. It is hoped that this investigation will lead to an explanation of the patterns behind the changes in accounting institutions.

In this paper, the term “practice” is used in the broad sense—at the macro level (the level of standard-setting) as well as at the micro level (the level of individual companies). The reason is that this investigation also necessitates the consideration of the social *raison d’être* of accounting research that can be achieved through a comparison with practice in the broad sense.

2. Identifying the basic facts: situating archival studies within accounting research

First, I will identify the basic facts. Table 1 shows the types of papers that have been

published in three main accounting journals (*Accounting Review*, *Journal of Accounting Research*, and *Journal of Accounting and Economics*) over the five-year period 2001–2005. As we can see, 481 articles were published in these journals during this period, of which 344 (71.5%) were archival studies. As shown in Table 1, a (a) value relevance analysis is a study that tests the correlation between accounting and other company information and market indicators (investment return, stock prices, etc.) (i.e., the value relevance of information) and corresponds to Suda’s (2000, chapter 6) “archival study oriented towards an analysis of the support functions for decision-making.” On the other hand, (b) agency cost analysis is a study based on a research design involving hypothesis-testing, which is informed by agency theory that investigates the causal relationship between accounting and other company information and the actions of economic agents, and corresponds to Suda’s (2000, chapter 3) “archival study oriented towards an analysis of the contract-support functions.” All other types of archival studies are classified as (c) “other empirical analyses”.

Table 1. Proportion of archival studies published in the three main accounting journals (2001–2005)

	Accounting Review		Journal of Accounting Research		Journal of Accounting and Economics	
1. Total published studies	210	100.0%	159	100.0%	112	100.0%
2. Empirical studies	145	69.0%	113	71.1%	86	76.8%
(a) Value Relevance Analysis	77	36.7%	72	45.3%	56	50.0%
(b) Agency Cost Analysis	57	27.1%	39	24.5%	30	26.8%
(c) Other empirical analysis	11	5.2%	2	1.3%	0	0.0%
3. Other	65	31.0%	46	28.9%	26	23.2%

Source: Compiled based on studies published in each journal from 2001 – 2005.

All of the studies that do not belong under (a) to (c) are classified as “3. Others.” The main research in this category comprises theoretical studies based on mathematical models (67 studies) and research informed by experimental accounting (56 studies).

This constitutes merely a broad overview of the papers published in the three main accounting journals over this five-year period. It was difficult to classify some of the papers solely into one category; the results shown in Table 1 are therefore not to be considered absolute. Yet, in spite of such limitations, we can at least see that it is an undisputable fact that archival studies have become an important trend in accounting research. This is also consistent with recent developments in accounting research in Japan. In other words,

archival studies now constitute such an overwhelming trend in accounting research that it is not possible to omit their existence when discussing the significance of accounting research. Thus, if we consider that the findings of archival studies are almost *never* reflected in accounting rulemaking, this leads us to question the actual *raison d'être* of accounting research in society. In this sense, it is hoped that the discussion that follows will also enable us to re-question the *raison d'être* of accounting research.

3. Empirical evidence and rulemaking

In recent years—specifically, since the Financial Accounting Standards Board (FASB) was established in 1973—we have so often observed accounting rulemaking that is not in keeping with the empirical evidence demonstrated in archival studies. In this section, I would like to confirm this by referring to the following three topics: (1) cash flow vs. accounting profit, (2) comprehensive income vs. net income, and (3) auditor independence. Topics (1) and (2) call into question the significance of the traditional concept of profit (net income), while topic (3) questions the significance of the company auditor: these have become important points of discussion and contention in the realm of rulemaking in recent years.

3.1. Cash flow vs. accounting profit

The FASB's Concepts Statements stipulated that “information about enterprise earnings and its components measured by accrual accounting generally provides a better indication of enterprise performance than information about current cash receipts and payments” (SFAC, No. 1, para. 44) and positioned cash flow during the period as one of the important pieces of information (or at least complementary accounting information) that should be included in financial statements (SFAC, No. 5, para. 13). U.S. standards relating to cash flow statements (FAS95, 1987) can said to have been established as an extension of this positioning.

From the late 1980s through to the 1990s, phrases such as “cash is king” (Copeland et al. 1990, p. 73) and “cash is fact, and accounting profit is opinion” (Wei, 2002) became very popular particularly in the field of corporate valuation. Accounting profit included accruals that reflected the manager's intent through their choice of or change in accounting policies. By contrast, since cash flow did not include this kind of bias, the basic argument behind these phrases was that cash flow information was therefore more useful than accounting profit information for investment decision-making purposes. These ideas also spilled over

into the design of accounting systems, with, for example, the IAS7 (revised in 1992) citing that “[information about cash flow] also allows comparison of information about the performance of the operation of different companies as it eliminates the effects of using different accounting treatments for the same transactions and economic events” (para. 4) as one of the “benefits of information on cash flow”. Other countries in succession, recognizing the importance of these arguments, proceeded to set their own accounting standards related to cash flow statements (Japanese standards were set in 1998), and the cash flow statement evolved globally into the “third financial statement.”

Table 2. Archival studies reporting relatively higher value relevance of accounting profit than cash flow information

Subject of study Explained variable	US market	Other markets
Return	Dechow (1994); Biddle et al. (1995); Biddle et al. (1997); Subramanyam (1996); Quirin et al. (1999); Guay and Sidhu (2001); Moehrle et al. (2001); Callen and Segl (2004)	Board and Day (1989) (UK); Cotter (1996) (Au); Charitou et al. (2001) (UK); Haw et al. (2001) (C); Uchida (2000) (Jp)
Stock Price	Penman and Sougiannis (1998); Francis et al. (2000)	Sakurai (1992) (Jp); Fujii and Yamamoto (2001) (Jp); Wakabayashi (2014) (Jp)

Note: The letters in brackets indicate the country: Au = Australia, C = China, Jp = Japan, UK = UK.

Although archival studies in Japan and overseas that investigated the comparative advantages of the value of cash flow versus accounting profit information (categorized in Table 1 under (a) value relevance analysis) recognized the incremental information value of cash flow information, almost all studies presented empirical evidence demonstrating the relatively higher value relevance of accounting profit information. That is, archival studies consistently reported that, in terms of value relevance, the “king” is accounting profit information rather than cash flow information. Table 2 shows representative examples of such studies.

3.2. Comprehensive income vs. net income

The traditional concept of accounting profit has also been criticized from the asset/liability view³. The fundamental point behind this criticism is that net income, which is based on the allocation of cash flow, is prone to distortion by a manager's latitude, whereas comprehensive income is based on stock valuation and therefore constitutes clear and objective information. Papers arguing for the necessity of adopting this perspective in standard-setting were published in particularly high numbers during the late 1990s through to the early 2000s. The G4+1 Group (1989, 1999) and the International Accounting Standards Committee (IASC) (2001) were considered representative of this trend. They argued for a rejection of realization as recognition criteria in accounting and the prohibition of the recycling of other comprehensive income. In other words, they wanted to see net income excluded from performance reporting and the concept of profit consolidated as comprehensive income. The Joint Working Group (JWG) (2001) argued for full fair value accounting of financial assets and liabilities as well as the recognition of changes in fair value as gains and loss. If recycling was prohibited, the JWG (2001) also argued in line with the G4+1 Group (1989, 1999) and IASC (2001) for a return to the exclusion of net income from performance reporting (i.e. a single statement of comprehensive income). Furthermore, the Joint Project of Financial Performance Reporting by Business Enterprises that was launched in 2004 by the FASB and IASB set out the consolidation of the concept of profit as comprehensive income (i.e., excluding net income from performance reporting) as an option for accounting systems (FASB, 2005b).

Table 3. Archival studies reporting relatively higher value relevance of net income than comparative income information

US market	Other markets
Cheng et al. (1993); Dhaliwal et al. (1999)	O'Hanlon and Rope (1999) (UK); Cahan et al. (2000) (NZ); Kubota et al. (2005) (Jp); Usui (2005) (Jp)

Notes:

1. The explained variable in all studies was return.
2. NZ = New Zealand. All other country codes are the same as Table 2.

Yet, almost all archival studies in Japan and overseas that had investigated the comparative advantages of the value of comprehensive income versus net income

information (categorized in Table 1 under (a) value relevance analysis) presented empirical evidence demonstrating that comprehensive income did not have more value relevance than net income. Table 3 shows representative studies.

What has particularly come to the fore on this topic is that, regardless of the fact that archival studies have repeatedly shown that the empirical evidence does not prove comprehensive income to be more value-relevant than net income, there have been persistent assertions in the realm of standard-setting for net income to be excluded from performance reporting; that is, for profit to be consolidated as comprehensive income. Supposing that such assertions were reflected in standard-setting, this would mean that the information actually considered more value-relevant—net income—would be excluded from the disclosed information. The previous section addressed the issue of cash flow vs. accounting profit. Here, the discrepancy between the findings of archival studies and practice basically comes down to an issue of interpretation, that is, which of the two is to be emphasized. With regard to comprehensive income vs. net income, however, this discrepancy is more than simply an issue of interpretation; this could amount to a very real problem in standard-setting that affects the very nature of accounting systems, not to mention their core constituent of how profit is measured. The nature of this discrepancy is therefore considered more serious than the former issue.

3.3. Auditor independence

Auditing today operates under a system of dual responsibility whereby responsibilities are clearly delineated into drawing up financial statements (the company's responsibility) and giving an opinion on whether the financial statements are presented fairly (the auditor's responsibility). The most important element underpinning this principle is auditor independence. Thus, until now, the Securities and Exchange Commission's (SEC) main role vis-à-vis professional accountants has centered on ensuring compliance with auditor independence requirements.

One of the main factors that the SEC has considered as impeding auditor independence has been an auditor providing audit and non-audit services to the same company. This is because it was thought that the provision of non-audit services, such as consulting or tax services, generates a conflict of interests, which can have a negative impact on auditor independence. From the late 1990s onwards, this view informed the SEC's efforts to gradually expand regulations on non-audit services. However, the most decisive development came with the Sarbanes-Oxley Act of 2002 (subsequently, "SOX"), which markedly strengthened regulations on the provision of non-audit services. Under SOX, an

auditor is prohibited from carrying out the following nine non-audit services (Sec. 201): (1) bookkeeping or other services related to the accounting records or financial statements of the audit client; (2) financial information systems design and implementation; (3) appraisal or valuation services, fairness opinions, or contribution-in-kind reports; (4) actuarial services; (5) internal audit outsourcing services; (6) management functions or human resources; (7) broker or dealer, investment adviser, or investment banking services; (8) legal services and expert services unrelated to the audit; and (9) any other services that the Public Company Accounting Oversight Board determines, by regulation, is impermissible. Thus, the provision of non-audit services by an auditor, particularly consulting services, was in effect positioned as an illegal activity.

However, the empirical evidence presented by almost all archival studies carried out in Japan and overseas for the causal relationship between non-audit services and auditor independence (categorized in Table 1 under (b) agency cost analysis; see left-hand column in Table 4⁴) demonstrated no statistically significant relationship between the performance of non-audit services (e.g., the relative amount of remuneration gained from non-audit services) and auditor independence (e.g., the auditor's opinion on financial statements with abnormal accruals). In other words, almost all archival studies continuously reported that a systematic dependency of the auditor on the client company—problematized by the SEC and parliament—had not been observed.

Table 4. Archival studies reporting no systematic dependency of auditor on client company

Studies verifying auditor independence	Studies verifying Elite Domination Hypothesis
Simunic (1984); Craswell et al. (2002); DeFond et al. (2002); Ashbaugh et al. (2003); Chung et al. (2003); Larcker et al. (2004); Matsumoto (2004)	Haring (1979); Hussein and Ketz (1980); Brown (1981); Puro (1985); McKee (1991)

Note: All studies refer to the US.

These findings also correlate with a series of archival studies carried out to verify whether the criticism of the “accounting establishment” is appropriate or not (right-hand column of Table 4). The “accounting establishment” is a term used by the Metcalf Subcommittee of the U.S. Senate in its 1997 report (commonly known as the “Metcalf report”). The report criticized the “Big Eight” group of accounting firms⁵, as they were then known, for (self-interestedly) setting—through the FASB, a body that is completely under their control—the very accounting standards with which they themselves have to comply

and which they apply in accordance with their client companies' wishes (Tsumori, 2002, pp. 297-298). The system setting the standards was termed the "accounting establishment." However, a set of archival studies that investigated whether the views of a specific group were at the core of standard-setting preferences (the "elite domination" hypothesis) uniformly rejected this hypothesis. They also presented empirical evidence to show that it could not be said that the views of the Big Eight were controlled by the preferences of their client companies (nor, therefore, that the client companies were indirectly controlling the FASB).

Here it should be added that SOX prohibited auditors from auditing the same company for more than five years because it had been judged that auditing the same company over the long term generates a cozy relationship between the client company and the auditor, which would have a negative impact on auditor independence (Sec. 203). However, Myers et al. (2003) actually reported a positive correlation between the auditor's length of service and quality of earnings when abnormal accruals or current accruals were used as a proxy. Similarly, Ghosh and Moon (2005) reported a positive correlation between the quality of earnings when earnings response coefficients were used as a proxy, the quality of auditing when the influence of reported earnings on stock ranking was used as a proxy, and the auditor's length of service. In other words, these archival studies presented empirical evidence that the quality of earnings and of the auditing itself improves with the length of service. These findings show that the aforementioned prohibition set out in Sec. 203 of SOX is not empirically supported.

4. Features of rulemaking and basic patterns

4.1. What has determined rulemaking?

The previous section (re)confirmed that accounting rulemaking in recent years has often not been in keeping with the empirical evidence demonstrated by archival studies. However, we do at least need to bear in mind the following two points.

First, the fact that archival studies are carried out *ex post*. Archival studies investigate the nature of information (its value relevance or causal relationship with the actions of economic agents), but this can only be demonstrated after the rule in question has actually been set (Saito, 2005, p. 11). In other words, aside from revising or repealing existing rules or setting rules within the framework of the international convergence of accounting standards, which gives access to the experiences of other countries as a "happened future" (Ito, 1996, p. 3), it is technically impossible to implement rulemaking based on the results

of archival studies. It goes without saying then that complete conformity between a rule that has already been set (the measure) and the empirical evidence that has come to light after the event (the result) is not something that we could realistically hope to see.

The second point is the bias in regulation that is generated through the asymmetric loss function (Watts and Zimmerman, 1986, pp. 229-230). The economic scale of phenomena triggering regulatory change is generally large (for example, Enron's off-balance sheet liabilities amounted to approximately 27 billion U.S. dollars, and WorldCom's total liabilities amounted to approximately 30 billion U.S. dollars), and they tend to attract a lot of public attention. Therefore, all other things being equal, implementing strong regulations focused on the phenomenon in question entails a relatively lower political cost for the regulator (e.g., the risk of being held politically accountable afterwards for a regulatory failure) when compared with not doing so. In other words, in terms of statistical probability, the incentive to enforce strong regulations aimed at prominent cases that have a high possibility of becoming outliers has always existed in the political process.

Nevertheless, what is important to stress here is that the inconsistency between rulemaking and empirical evidence is too pronounced to be explained by these two points. What is more, all of the cases demonstrate consistent trends. Of course, archival studies cannot always be said to provide an accurate interpretation of all the facts relating to accounting issues. However, in the field of accounting research, there are no signs that an alternative scientific fact-finding method will be developed to replace archival studies in the foreseeable future. For the time being at least then, it is acceptable to see the empirical evidence presented by these archival studies relating to each of the accounting issues with which they deal as scientific fact. In the rest of this paper, the term "fact" will be used in this sense, unless specified otherwise.

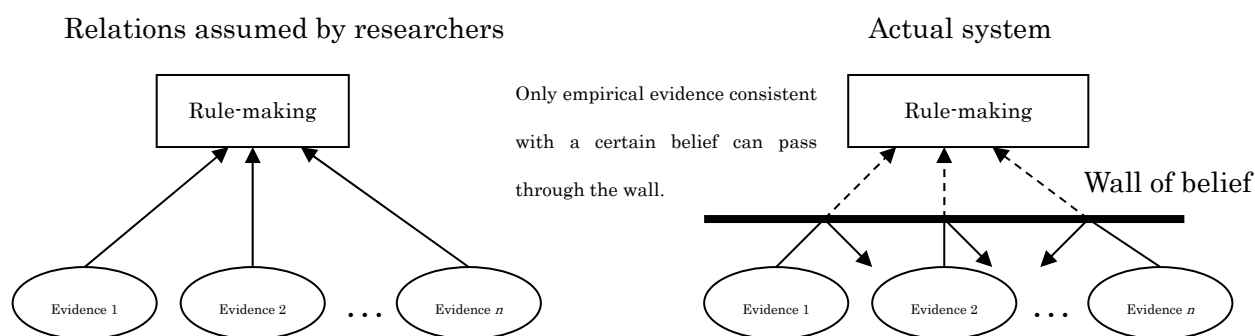
As I have repeatedly shown so far, accounting rulemaking in recent years has often not been in keeping with the empirical evidence demonstrated in archival studies. Even though it should have been possible to set rules based on empirical evidence (at least to a certain extent) in cases involving a revision or repeal of existing rules or within the framework of the international convergence of accounting standards, we saw in the previous section that besides rulemaking with regard to topic 3.2 (comprehensive income vs. net income) and topic 3.3 (auditor independence) simply being inconsistent with the relevant empirical evidence, proposals were intermittently put forward that either contradicted or conflicted with empirical evidence, and under SOX, rules were actually set in accordance with these proposals. Even in the U.S.—where archival studies are most widely used—FAS33, Financial Reporting and Changing Prices (effectively abolished in 1986) has been virtually the only exception of a revision or repeal of an existing rule being carried out in accordance

with empirical evidence, and this remains so to this day.

In this sense, we can say that recent rulemaking has basically not been implemented based on *fact*. In the social sciences, a transcendental (and thus unfalsifiable) factor that does not depend on fact is known as a “belief.” If we posit that it was this kind of transcendental factor that has determined rulemaking in recent years, this means that it can only be belief. This now enables us to answer Research Question 2, set out at the start of this paper.

The beliefs of the rulemakers (particularly the FASB and the IASB) stood like a wall in the way of the empirical evidence, preventing the findings of archival studies being applied to rulemaking (see Figure 1). The only thing that can pass through the wall of belief is empirical evidence that is consistent with the belief. Facts are powerless in the face of belief. Statements by archival researchers, for example, that it is not possible to design effective policies without in-depth knowledge of the real world (Okabe, 1985, p. 18) or that constructive arguments based on evidence from archival studies lead to the creation of more appropriate disclosure systems (Suda (ed.) 2004, p. i), have not shown any signs of reaching the ears of the rulemakers, or at least not yet.

Figure 1. Relationship between empirical evidence and rulemaking



As was shown in Table 1, archival studies constitute an overwhelming trend in accounting research. From a quantitative perspective, therefore, it is safe to say that archival studies have already been established as a legitimate form of accounting research. As a demonstrative method, too, they are undergoing remarkable qualitative developments every day. Irrespective of this, if the findings of archival studies are consistently failing to reach the realm of rulemaking, then this can even lead us to the paradoxical interpretation that their popularity and refined techniques are actually only proof of their essential uselessness

and powerlessness.

4.2. The significance of rulemaking derived from belief

If the rules were determined by the beliefs of those who set them, this raises a new question: In such a strongly market-oriented U.S., why were non-market—in the sense that they did not conform to market facts (including the auditing-service market)—rules set? If they were determined by beliefs that did not fit with market facts, there must have been some kind of social significance and rationality for this to have been maintained almost consistently for more than a quarter of a century.

Yano (2005) provides a useful viewpoint for thinking about this problem. Yano (2005, p. 16) argued that the 20th century was a time when rules were implemented to protect the market in order to secure the quality of competition and information. If we consider the case of the U.S., and adding my own interpretation, I would summarize the gist of what Yano (2005) was arguing as follows.

During the Industrial Revolution, discontinuous technological innovation (improving product quality) led the way, and the quality of competition and information, unable to catch up, fell out of balance with the technology and declined. Since there was the risk that the market itself would collapse if this state of imbalance was not addressed, rules were implemented to circumvent such a situation. For example, during the First Industrial Revolution (when industrial capitalism was established in the 19th century), in order to circumvent the risk of the labor market collapsing as a result of the considerable power imbalance between the workforce and management, a whole range of social welfare rules were established (e.g., the Act from 1840 to 1860, which stipulated a 10-hour working day). During the Second Industrial Revolution (when financial capitalism was established at the beginning of the 20th century), in order to circumvent the risk of a capital market collapse as a result of crashing stock prices, the Securities Acts (1933 and 1934) were enforced with the aim of restoring order and stability to the market. During the Third Industrial Revolution (when the new economies emerged at the end of the 20th century and the beginning of the 21st century), in order to address the negative impact on the market of the risky business practices of the new economies and the associated accounting scandals (loss of public trust in accounting), SOX was enacted with the aim of strengthening corporate ethics and accountability.

If we relate these points to the issues under investigation in this paper, we can say that rulemaking in the U.S. was determined by the U.S. belief in “protecting the markets.” M.G. Oxley, one of the men involved in drafting SOX, said in the report submitted to the House

of Representatives: “[t]his legislation responds to the problems of the marketplace through a fair and balanced approach that ensures that the Nation’s capital markets continue to be the strongest in the world” (House of Representatives, 2002, p. 19). The idea that the U.S. markets are “the strongest in the world” was anecdotally widespread. Yet there was no explanation offered concerning fundamental points such as the standards against which the U.S. markets are being measured when they are judged to be “the strongest in the world”; and why the U.S. markets always need to continue to be “the strongest in the world.” M.G. Oxley’s above-mentioned statement bears extremely eloquent testimony to how self-evident and important a mission protecting the markets was for U.S. rulemakers.

This then leads us to the tentative conclusion that protecting the markets was the U.S. belief, and that, consequently, the essence of the rules to protect the markets was rooted in protecting this U.S. belief⁶. That is, we can now put forward an answer to Research Question 1.

S.A. Zeff, who has written about the development of accounting regulations in the U.S., stated as follows: “[a] study of the U.S. experience suggests that the academic literature has had remarkably little impact on the writings of practitioners and upon the accounting policies of the American Institute and the SEC. Too often, accounting theory is invoked more as a tactic to buttress one’s preconceived notions, rather than as a genuine arbiter of contending views” (Zeff, 1974, p. 177)⁷.

From a Japanese perspective, the best strategy continues to be maintaining the legitimacy of their presence on the international markets by ensuring that domestic rules resemble American ones in an isomorphic way⁸. Strategies such as efforts regarding the international convergence of accounting standards, requiring representatives of listed companies to submit a written oath (implemented from January 2005 onwards on the Tokyo Stock Exchange) and prohibiting auditors from auditing the same company for more than seven accounting periods (Article 24(3) of the revised Certified Public Accountants Act, 2004)⁹ are typical cases of this kind of isomorphism that have been seen in recent years. Isomorphism of economic systems and corporate governance, too, will be something that occurs at around the same time.

5. Indirect approach to belief formation mechanisms

I believe that the investigation thus far has enabled me to provide an answer of sorts to the two research questions outlined at the beginning of the paper. However, we are aware that this constitutes no more than a preparatory investigation for clarifying the formation

process of accounting systems and possibilities for their evolution. That is, thus far we have been able to show that the main factor determining accounting rulemaking in recent years has been the belief of U.S. rulemakers in protecting the markets. However, in order to build on this and clarify the formation process of accounting institutions and possibilities for their evolution, there is another issue that we must address: we need to understand the mechanism behind the formation of this belief. If we avoid this task, our investigation will be nothing more than a superficial analysis of the rule-formation process. In this section, I would like to expand on the investigation to include a more in-depth study of the mechanism behind the formation of this belief.

5.1. Infinite regression in discussion of mechanism behind belief formation

What determined rulemaking (particularly in the case of the U.S.) was the rulemakers' belief that overrode the empirical evidence. By what mechanism, then, was such a belief—that could override empirical evidence—formed?

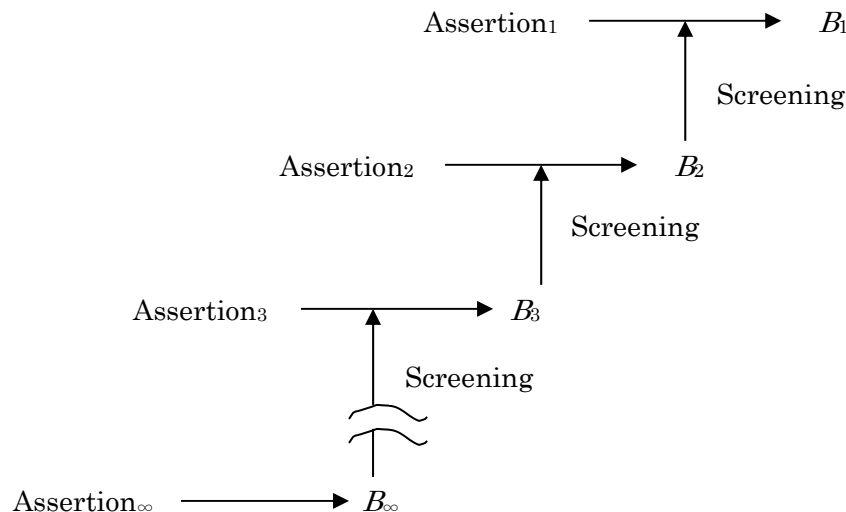
Belief must be connected in some form to reality since it is applied in the real world as the ultimate code of conduct for economic agents. Therefore, belief can be considered to have *emerged* from reality. However, if we try to directly explain the formation process of belief based on the supposition that it emerges from reality, we face the problem of infinite regression.

Let us return to the argument in section 4.1. Here, we now need to substitute “fact” with “assertion” (a statement concerning a fact). This is because in asserting that a belief is fact, there is no guarantee that this is a fact in the scientific sense. What we can observe is “fact” in the sense of “asserting as fact something that one believes is fact.”

In light of the above points, we can reformulate the conclusion in 4.1 as follows: an assertion can pass through the wall of belief and become a new component of that belief if the assertion conforms to a given belief. An assertion that does not conform to the belief is obstructed by the wall of belief and excluded from the belief formation process. If this is so, the next question that we need to answer is: Through what process is a given belief that fulfills the screening function in this process formed? This is because depending on the trajectory of a given belief, this will determine whether an assertion passes through the wall of belief or not. This means that in order to demonstrate the formation process of a belief (B_1), we need to look further back and clarify the formation process of a given belief (B_2) that is already part of this process. The same applies to belief (B_3) that lies even further back in the process. Thus, in trying to understand the formation process of a belief, we face the problem of infinite regression: understand $B_1 \rightarrow$ understand $B_2 \rightarrow$ understand $B_3 \rightarrow \dots \rightarrow$

understand B_∞ (see Figure 2)¹⁰.

Figure 2. Infinite regression discussed as the mechanism behind belief formation



In order to circumvent this infinite regression, I would like to discuss in the following section the type of assertion that fits with a given belief and why it does so. By looking at the mechanism by which specific assertions pass through the wall of belief, I hope to be able to indirectly approach the mechanism behind the formation of belief.

5.2. Clear and simple assertions and citizens' bounded rationality

Based on the discussion in section 4, we can categorize the types of assertions that fit with beliefs by the greatest common denominator in order to identify the following two assertions. First, we should separate accounting procedure from managers' intent as far as possible and faithfully reflect the company's economic reality in the accounting information. Second, all market participants need to be mutually independent and have a strong sense of morality. Both constitute clear and simple assertions that are intuitive and easy to understand.

The rationale behind the first assertion is that the comparative advantages of cash flow over accounting profit have been emphasized (Copeland et al. 1990) and the introduction of full fair value accounting of financial assets and liabilities (JWG, 2001) and the consolidation of profit as comprehensive income (G4+1 Group, 1989; IASC, 2001) have been advocated. The rationale behind the second assertion is that under SOX, for example,

auditors were prohibited in principle from providing non-audit services (Sec. 201) and from auditing the same company for more than five years (Sec. 203), and the burden of proof was placed on the Chief Executive Officer (CEO) and Chief Financial Officer (CFO) regarding the fair presentation of financial statements (Sec. 302 and Sec. 906). In terms of primarily pursuing uniformity and external clarity of regulation, these assertions and measures go hand in hand.

Why, then, do clear and simple assertions such as these—that are not derived from fact (or rather, are in conflict with fact)—fit with belief?

Gaining a scientific understanding of certain questions entails extensive information costs, including the cost of acquiring specialist knowledge—for example, questions such as “What kinds of factors have taken what kind of path to generate an accounting scandal? and “What kind of cost–benefit relationship is acceptable with regard to regulation? The average citizen (a different form of existence to the kind of rational market participants tacitly supposed in the previous section = the public) does not have any incentive to bear those kinds of costs; furthermore, all the average citizen has is “bounded rationality.”¹¹ However, what citizens do know is that some kind of new rule is necessary to circumvent a malfunction or collapse of the market.

For such citizens, the aforementioned naïve and intuitive assertions are a lot more likely to be acceptable than scientific assertions, as long as they do not entail obvious contradictions or immediate factual errors. Further, as these naïve and intuitive assertions proceed to permeate society, they come to function as self-enforcing norms for micro economic agents, even if they are less rational than fact. A. Downs’s theory on the rational ignorance of citizens is in operation¹². In such a situation, the fate for the academics who devote themselves to scientific assertions is social isolation.

In summary, I have argued that assertions that fit with belief function as an intermediary for the belief to develop into a social rule; at the same time, the assertion itself gradually transforms into part of the belief through this process.

5.3. A more general explanation based on CIA

In CIA, an institution is something that arises when people strategically interact in domains such as politics, economics, society, and organizations to become a self-enforcing rule that each and everybody accepts as a given (Aoki, 2002). Under CIA, the process of a norm becoming a rule can also be understood as “institutionalization.” If we reframe the belief formation mechanism outlined above more generally from the point of view of CIA, we would come up with the following.

When a system becomes too complicated, the only people who understand its scientific mechanisms are the specialists directly involved in designing and operating it. Nonetheless, its functions penetrate to all corners of society and the system becomes an essential element of people's everyday lives. In such a case, people are forced to find a way to understand the system; they would not be able to enjoy a stable coexistence with it otherwise. However, information-cost restrictions mean that people do not have sufficient incentives to try to understand it in scientific terms. At the same time, all they have is bounded rationality. In such a situation, people turn to clear and simple assertions, since this enables them to significantly reduce their information costs and the strain on their imagination. As a result, they remain ignorant to the scientific significance of the mechanism, but they succeed in coexisting with the system. Further, when the assertion that has gained acceptance through this process takes hold throughout society, it becomes an institution, which enables people to enjoy a stable coexistence with the system.

There are two prerequisites for an assertion to become an institution in this way: 1) the main functions of the system must not be failing, at least for the time being; and 2) an intuitive explanation for it must exist. There is usually more than one assertion that meets these requirements. When people in a given society—the micro economic agents—repeatedly strategically interact on a daily basis, “strategic complementarity”¹³ determines that they will go with the relatively superior assertion. This enables people to gain the maximum benefit. We can demonstrate this process of achieving balance as a mixed-strategy equilibrium in a random match game¹⁴ played out in accordance with the payoff matrix shown in Table 5 below.

Table 5

	Assertion A	Assertion B
Assertion A	1,1	0,0
Assertion B	0,0	1,1

Table 5 shows that Assertion A and Assertion B both meet the aforementioned requirements. In terms of how much they will contribute to people's lives, there is very little difference between the two. However, unless all people choose the same assertion, they will not be able to gain any benefits. In a society where different assertions exist in parallel (i.e., a society where an understanding different to your own exists in parallel), people do not feel confident in using the system in question. If we say that in such a society, the proportion of people choosing Assertion A is p and the proportion of people choosing Assertion B is $1 - p$, the payoff a person can expect to receive when choosing Assertion A is p and the payoff a

person can expect to receive when choosing Assertion B is $1 - p$. It follows therefore that the best choice for people is Assertion A when $p > 1/2$, Assertion A or Assertion B when $p = 1/2$, and Assertion B when $p < 1/2$. As this game is repeated throughout society, p converges at 0 or 1. In other words, either Assertion A or Assertion B takes hold as the stable institution (i.e. a Nash equilibrium¹⁵).

What we need to bear in mind here is that regardless of the choice of which assertion becomes a Nash equilibrium, that assertion does not necessarily constitute a scientific explanation of the facts relating to the system. It is only a statement that people have chosen because of their psychological understanding of the system (a subjective and intuitive understanding). The key point is that a psychological understanding of a given system is established in society by means of strategic interaction between people.

6. Possibilities for institutional evolution in accounting

6.1. The U.S. belief and institutional evolution

Our investigation thus far has brought us to the understanding that rulemaking not in keeping with empirical evidence has been determined by the U.S. belief in protecting the markets. In light of this, we discussed the mechanism behind the formation of a belief that can override empirical evidence, based on the concept and approach of CIA. As a result, we have been able to demonstrate by using logical analysis that among the assertions that fit with the belief in protecting the markets and meet certain requirements, one assertion is established as an institution (a social rule) through the strategic actions of micro economic agents, citizens. We can take this further and say that changes in the game situation will also engender changes to the institution associated with the game's equilibrium. This is where the possibilities for institutional evolution in accounting are concealed.

As we have seen in section 4.2, the U.S. belief in protecting the markets can be considered an element that has penetrated history. If this belief is a given, I would like to investigate the kind of institutional evolution that can be observed when the game situation changes. The discussion below will be informed by evolutionary game theory (EGT).

Evolutionary game theory (EGT) differs from classical game theory in that it supposes a world of bounded rationality composed of elements such as: (1) a single society where multiple players exist; (2) these players encounter each other randomly and have no memory of encounters with specific players (i.e. all each player knows is how strategies are distributed throughout the society as a whole, and they determine their own strategy based only on this knowledge); and (3) “inertia” and “myopia.” EGT is therefore very useful for

analyzing the kind of conventions and rules that come to exist in a society and how they change (Okuno and Takizawa, 1996, p. 277)¹⁶.

6.2. Description of evolutionary mechanisms based on EGT

I would like to start by describing the mechanisms for institutional evolution based on EGT¹⁷. Let us say that the standard game that players in a society are faced with is initially assigned the payoff matrix set out in Table 6(a). In this game, it is supposed that our bounded rational players will choose one of the two rules, *FV* or *HC*.

Table 8-6(a)

	<i>FV</i>	<i>HC</i>
<i>FV</i>	2,2	0,3
<i>HC</i>	3,0	1,1

Table 8-6(b)

	<i>FV</i>	<i>HC</i>
<i>FV</i>	2,2	0,0
<i>HC</i>	0,0	1,1

It is easy to see that the Table 6(a) game corresponds to the “Prisoner’s Dilemma.” The dominant strategy is *HC*¹⁸. That is, when the players encounter each other randomly in a game played in accordance with Table 6(a), all of the players chose *HC*, and this choice becomes the evolutionarily stable strategy. Therefore, based on the historical initial condition of this society, *HC* is institutionalized. Incidentally, an evolutionarily stable strategy is the dominant strategy in a particular society¹⁹. If a minority group of players who behave in a different way invade a society that has an evolutionarily stable strategy, their low fitness prevents them from producing offspring (i.e. they are unable to grow to become a powerful force).

Let us then say that the strategy conditions change and the payoff matrix changes from Table 6(a) to Table 6(b). Conditions change in that a player’s payoff for choosing *HC* when their opponent chose *FV* falls from 3 to 0. Following such a change, the game converges as a pure coordination game with two Nash equilibria of (*FV*,*FV*) and (*HC*,*HC*). However, as mentioned above, the historical initial condition in this society stipulates choosing *HC* as a social rule. Even if the above change in the environment occurs, as long as the other players continue to choose *HC*, the best response dynamics for each player remains *HC*, as “inertia” and “myopia” interact in the players’ rule choices.

In a game based on Table 6(b), the payoff is (2,2) for (*FV*,*FV*) and (1,1) for (*HC*,*HC*). This means that (*FV*,*FV*) Pareto dominates (*HC*,*HC*). Nevertheless, this society continues to choose the Pareto-inferior institution, (*HC*,*HC*), as this is stipulated by the historical initial

condition. In CIA, this kind of situation is known as “coordination failure,” and resolving this failure enables institutions to evolve.

6.3. Application of the game situation to accounting

In this section, I will attempt a more concrete discussion of the mechanism behind institutional evolution by applying the above game situation to accounting problems.

Let us say that *HC* refers to historical cost accounting and *FV* to fair value accounting. The game situation as per Table 6(a) is stipulated in the historical initial condition and shows a society where historical cost accounting has taken hold as an institution. This model could broadly apply to the U.S. until the mid-1980s and to Japan until the 1990s. In a society of this nature, the features of historical cost accounting, which are its measurement of “exactness and objectivity” (Werntz, 1962, p. 81), “verifiability” (AAA, 1966, p. 28), and “hardness” (Ijiri, 1975, p. 35), fall in line with the function expected of accounting, which is what makes it the dominant strategy. In other words, all other conditions being equal, historical cost information is more useful than fair value information because it has the aforementioned attributes, and it therefore follows that those who choose historical cost accounting will be rewarded with a relatively higher payoff than those who choose fair value accounting. In a society where choosing historical cost accounting has been established as an evolutionarily stable strategy, historical cost accounting reigns supreme as an overwhelmingly dominant species that literally forbids the reproduction of other species.

That said, the Table 6(a) game situation suggests that the accounting environment has already become unsettled. That is, a strategy combination (*FV, FV*) exists that offers a payoff of 2, which is greater than the payoff of 1 associated with the Nash equilibrium (*HC, HC*). This kind of situation arises when people’s expectations of accounting change with the financialization and informatization of the economy. However, breaking away from the evolutionarily stable rule of historical cost accounting will have a considerably negative effect on the payoff (including the political cost associated with a non-dominant species being a heretic, in addition to the cost of changing strategy), and the dominant players—those who chose historical cost accounting—will unilaterally benefit. This is why, in a game situation based on Table 6(a), historical cost accounting will continue to be chosen as a legitimate rule.

Yet with time, the game situation changes from Table 6(a) to Table 6(b). In concrete terms, this change shows that the relative cost of breaking away from historical cost accounting has fallen. That is, the economic agents won’t see a unilateral reduction in their payoffs even if they break away from historical cost accounting; rather, they will receive the

same treatment (payoff of 0) as those who choose historical cost accounting do. Further, this kind of change occurs when the social resistance to breaking away from historical cost accounting decreases with the increasing financialization and informatization of the economy, and more emphasis is given to the comparability of accounting information in circulation. In other words, in such a situation, there will be no payoff unless the economic agents share the comparable information, be it historical cost information or fair value information.

As a result of this change, the game will converge as a pure coordination game, with the social rule becoming either historical cost accounting or fair value accounting. As mentioned above, in such a society, the historical initial condition stipulates choosing historical cost accounting as the traditional rule. Even if the aforementioned environmental change occurs, as long as the other economic agents continue to choose historical cost accounting, historical cost accounting will remain the best response for all economic agents since “inertia” and “myopia” interact in their choice of rules. Theoretically, resolving this “coordination failure” will enable the institutional evolution of accounting.

6.4. A closer examination of real-world accounting problems

Before investigating how to resolve the “coordination failure,” I would like to build on the discussion above and take an even closer look at real-world accounting problems.

It is commonly accepted that accounting in the U.S. in recent years has been extremely strongly oriented towards fair value accounting. The issue of consolidating profit as comprehensive income that was discussed in section 3.2 is a symbolic indication of this. By applying EGT terminology, we might say that fair value accounting is in the process of becoming the evolutionarily stable strategy in rule formation in the U.S. today. However, it was not actually that long ago that fair value accounting acquired this kind of status in the U.S.

R.R. Sterling²⁰, who is known to be a proponent of current value accounting, recalled (below) how his proposal for accounting recognition based on “representational faithfulness” when the Conceptual Framework Project (specifically, during the establishment of SFAC No. 5) was rejected by the FASB. Even if his rather extreme rhetoric is best taken with a pinch of salt, we can still get a sense of the ideological situation in the U.S. accounting sector during the mid-1980s; his comments show that fair value accounting was still very much seen as a heretical social rule.

Paradoxically, the rejection of current values by some FASB members resulted in their

rejection of my proposals not to adopt current values. The obstacle became clear to me when in a formal, public FASB meeting one member said to another: “Just as I see a communist beneath every bush, I see current values beneath his every word.” That brought back memories of McCarthy’s logic that one’s denial of being a communist spy was taken as evidence that one was a communist spy because a communist spy would deny that he is a communist spy. It was then that I realized that my denials were to no avail, that no matter how many times I said I was not proposing current values, some would see my efforts as attempts to lead them down a primrose path. (Sterling, 1985, preface)

The Statement of Financial Accounting Concepts (SFAC) No. 5 (1984) actually reads: “[r]ather than attempt to select a single attribute and force changes in practice so that all classes of assets and liabilities use that attribute, this Concepts Statement suggests that use of different attributes will continue, and discusses how the Board may select the appropriate attribute in particular cases” (SFAC, No. 5, para.70). This would support R.R. Sterling’s comments.

However, later, as we move into the 1990s and see the further financialization and informatization of the economy, a series of accounting standards were implemented that were oriented towards fair value accounting. Examples include “Accounting for Certain Investments in Debt and Equity Securities, FAS115, 1993” and “Reporting Comprehensive Income, FAS130, 1997.” By 2000, SFAC No. 7 was announced, which presented a general principle relating to the use of present value. It is safe to say that the sense of resistance in U.S. accounting to fair value accounting of which R.R. Sterling had spoken had basically disappeared in the process.

However, the institutional evolution from historical cost accounting to fair value accounting was far from smooth. As we saw in section 3.2, archival studies almost consistently reported that comprehensive income—as an aggregate value of fair value information—was not found to have greater value relevance than net income. In other words, although the FASB had identified fair value information, particularly its aggregate value of comprehensive income, as useful, market participants decided not to use it over net income in practice and are basically still not making use of it today. By applying EGT terminology, we can say that choosing fair value accounting has not yet taken hold in U.S. society as an evolutionarily stable strategy. Further, if we suppose that U.S. society is based on a game situation as shown in Table 6(b), then this means that a “coordination failure” has arisen.

6.5. Conditions for breaking away from a Pareto-inferior state

In this section, I would like to return to the analysis in section 6.2 in order to investigate the conditions necessary for breaking away from a Pareto-inferior state and thus resolving the “coordination failure.”

In a Table 6(b) game situation, let us say that the proportion of players choosing FV is p and that the payoff for choosing FV is EU_{FV} , and the payoff for choosing HC is EU_{HC} . This gives the following:

$$EU_{FV} = 2p$$

$$EU_{HC} = 1 - p$$

It follows therefore that the condition for breaking away from a Pareto-inferior state is:

$$EU_{FV} - EU_{HC} = 2p - (1 - p) > 0$$

That is, $p > 1/3$

In other words, if more than one in three players choose FV , this society will resolve its “coordination failure” and break away from its Pareto-inferior state. However, as we can see from Table 6(b), this condition applies when the payoff for (FV, FV) is double that for (HC, HC) . If the payoff difference increases, for example if the payoff for (FV, FV) is (3,3) while for (HC, HC) is (1,1), the necessary condition becomes $p > 1/4$. That is, as the new Nash equilibrium payoff increases in relative terms, the proportion of players who need to make the choice that will promote institutional evolution decreases (institutional evolution can be realized more easily and in a shorter time).

Conceivable policies to create a situation that would meet the aforementioned conditions include: (1) systematically cultivate players (players with new genes) who will seek to acquire a higher payoff by choosing FV ; (2) use government intervention to encourage players to choose FV rather than HC by implementing policies to increase the difference between payoffs for (FV, FV) and (HC, HC) ; (3) promote direct contact or exchange with societies where FV is the evolutionarily stable strategy²¹. In the field of accounting, any one of these policies would mean taking stronger measures to ensure that compiling and disclosing fair value information is the benchmark in accounting practice and rulemaking.

The previously addressed topic of the FASB and IASB’s Joint Project of Financial Performance Reporting by Business Enterprises (retaining the possibility for profit to be consolidated as comprehensive income) could be counted as an example of such policies. It is also highly likely that the following examples (not addressed in this paper) are linked to such policies: the FASB’s Project of Fair Value Measurement that was launched in 2003

(FASB, 2006a) and the FASB and IASB's Joint Project of Conceptual Framework that was launched in 2004 (FASB, 2006b). In other words, it appears that some policies that promote the institutional evolution of accounting have already been implemented. If this is the case, it may simply be a matter of time before U.S. society, and maybe the global society as well, resolves its “coordination failure” and breaks away from its Pareto-inferior state. In fact, some recent archival studies—albeit in very small numbers—have presented empirical evidence to demonstrate that comprehensive income is more value-relevant than net income (e.g., Hirst et al. 2001; Biddle and Choi, 2002; Ide, 2004).

6.6. Noteworthy points

Several points that should be considered are highlighted in this paper. I would like to identify the points considered particularly important in understanding the nature of institutional evolution in accounting.

First, in this paper, the investigation was carried out under the assumption that while the rulemakers understand the “true” game situation surrounding the choice of rules, the boundedly rational market participants do not, which generates an equilibrium that does not fit with the “true” game situation. Until section 4, it was assumed that market participants considered the empirical evidence generated by the market as basic facts and that the rulemakers were setting rules that did not fit with these facts. The fact that the rulemakers believed that their understanding of the game situation was the true one is a problem at the level of belief. Considering this point, the assumptions in the later sections are no different to those prior to section 4. The later sections differ from section 4 in that they assume that the game situation that rulemakers believe to be true does indeed correspond to the true game situation. We altered our assumption in this way because otherwise we would not have been able to derive, with logical consistency, the possibilities for institutional evolution from the currently observable empirical facts and accounting phenomena. If this assumption were to show major signs of collapse, the investigation in this paper would, of course, lose its explanatory power. Such limitations are therefore inherent to the investigation in this paper.

Secondly, this paper investigates the process of institutional evolution for protecting the markets, taking the U.S. belief in protecting the markets as a given. In other words, the topic referred to—historical cost accounting vs fair value accounting—was positioned as an institutional tool to protect the markets. From the 1920s through to the 1940s, the calculational framework of U.S. accounting underwent a fundamental transition from current (fair) value accounting to historical cost accounting. Therefore, purely based on the

relationship between fair value accounting and historical cost accounting, we could also see the changes that occurred from the 1990s onwards as nothing but an institutional change in the opposite direction (Saito, 2003, p. 35). “Evolution” is different to “development.” Institutions are always “evolving” as they come to include new kinds of elements, but this evolution does not necessarily mean that it is “developing” from a lower level to a higher one. The investigation in this paper is based on this view of history.

7. Conclusion: implications for accounting research

I believe that I have so far largely achieved the aim of this paper, which was to demonstrate the formation process of accounting institutions and the possibilities for them to evolve, based on the concept and approach of CIA.

If the formation process of accounting institutions and the possibilities for their evolution are as described in this paper, where does this leave the *raison d'être* of accounting research and archival studies in particular? This question addresses the implications of this paper for accounting research. I would like to conclude by giving a tentative answer.

Regardless of whether it is the rulemakers or the market participants who are the more rational party, it is an indisputable fact that archival studies have shown that recent rulemaking has often not been in keeping with empirical evidence. In other words, with the exception of a very small number of cases (e.g., abolition of FAS33), the chain of events involving empirical evidence → rule setting/revision → value relevance improvement has not existed in reality.

What, then, is the relationship between rulemaking and value relevance? In light of the investigation so far, one possible hypothesis would be that a chain exists between rulemaking and value relevance in the form of: rule setting → market participants learn about the rule → value relevance is generated. In other words, the absence or presence of value relevance is not the guideline for rulemaking but the result of it. Further, mediating between rulemaking and value relevance is the market participants learning about the rule. As market participants become more acquainted with the new rule, understanding of the accounting information that is supplied under this rule becomes institutionalized. As a result, value relevance is generated for this information (the systematic relationship between accounting information and market participant behavior).

For example, Usui (2005) studied a sample of Japanese companies to analyze the value relevance of pseudo comprehensive income²² and found that pseudo comprehensive income—aggregated from both individual and consolidated statements—had only

extremely low incremental information value, but that the individual items of pseudo other comprehensive income (difference in revaluation of land under the Act on Revaluation of Land, unrealized gains and losses from available-for-sale securities, and foreign currency translation adjustments) had a higher incremental information value than the aggregate value of pseudo comprehensive income. If we refer to the aforementioned hypothesis, one reason behind the difference in value relevance may be that while Japan already has disclosure rules for the individual items of pseudo other comprehensive income, and therefore, market participants already have some understanding of each type of information, there are no disclosure rules for the aggregate value of pseudo comprehensive income, which means that market participants have not been able to gain an understanding of this information.

This is just a tentative interpretation, but focusing on this kind of aspect may suggest that the social *raison d'être* of archival studies lies in sending signals (information suggesting how strategy distribution has changed in the game) to the market regarding the status of or trends in institutional changes and thus promoting (or hindering) changes in the behavioral patterns of market participants, by providing an *ex post* account of how the institutionalization of existing or new rules has progressed (or not).

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¹ Please refer to Aoki (2001) for a basic theoretical overview of CIA.

² In this paper, the term “archival studies” is used to mean studies where the main analytical method applied is statistical analysis of archival data. As shown in Table 1, archival studies have come to constitute an important trend in accounting research in recent years. They are also referred to as “empirical studies.”

³ The asset/liability view was presented in FASB (1976) as a view of accounting that should be chosen as a foundation for standards setting.

⁴ By contrast, Frankel et al. (2002) reported a positive correlation between remuneration from non-audit services and discretionary accruals. Ashbaugh et al. (2003) and Larcker and Richardson (2004) later implemented an *ex post* verification of the empirical findings in Frankel et al. (2002) and identified inherent problems with the research design.

⁵ The “Big Eight” at the time were the following eight accounting firms: Arthur Andersen & Co. (Chicago); Ernst & Ernst (Cleveland); Haskins & Sells (New York); Coopers & Lybrand (New

York); Peat, Marwick, Michell & Co. (New York); Price Waterhouse & Co. (New York); Touche Ross & Co. (New York); and Arthur Young & Co. (New York).

⁶ I used the term “tentative” here because the observation is inferred on the basis of collateral evidence. The conclusion may change in light of additional collateral evidence. It is impossible to find direct proof with this type of issue.

⁷ On this point, please refer to Watts and Zimmerman (1979, p. 297), for example: “[t]he dominance of the information objective arose, we suspect, as a public interest justification consistent with and in support of the *raison d’être* of the Securities Acts. The SEC was justified in terms of, and charged with, maintaining the orderly functioning of the capital markets. In particular, the SEC was to protect the public from another stock market crash. That crash was alleged to have been caused in part by inadequate corporate disclosure, although very little evidence exists to support this claim.”

⁸ This process is termed “isomorphism.” Isomorphism is a term used in new institutional sociology to mean “a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions” (DiMaggio and Powell [1983], p. 149). In other words, the theoretical implications of isomorphism are that a given organization has to incorporate the rules that dominate in its field and isomorph itself into a dominating organization in order to win public confidence and continue to stably exist in that field (Covalessi et al. [1993] p. 66). This is the process whereby an organization acquires legitimacy in a society.

⁹ This regulation, which was aimed at strengthening the independence and status of auditors, was later strengthened further through the partial amendment of the Certified Public Accountants Act.

¹⁰ Please refer to Aoki (2001, pp.14-15) for a discussion of infinite regression.

¹¹ This differs from assumptions in neoclassical economics in that real economic agents are considered to possess limited rationality because of their restricted cognitive ability. This is referred to as “bounded rationality.”

¹² A. Downs coined the term “rational ignorance” to mean that if the relative cost of acquiring additional information is greater than the benefits it will bring, it is rational—in terms of the economic benefit—for citizens to remain “ignorant.” Please refer to Oishi (1995, p. 124) for a more detailed explanation.

¹³ “Strategic complementarity” means that as a certain behavioral pattern becomes universal in a society, choosing this pattern will become an increasingly advantageous choice for each economic agent.

¹⁴ “Random matching” refers to a situation whereby a player’s opponents are unknown prior to the game and are selected at random from the remaining components of the society.

¹⁵ In an N -person non-cooperative game, the players’ set of strategies $s^* = (s_1^*, \dots, s_n^*)$ is said to be in a Nash equilibrium when strategy s_i^* is the best response for all players i ($= 1, \dots, n$) to the other players’ set of strategies, $s_{-i}^* = (s_1^*, \dots, s_{i-1}^*, s_{i+1}^*, \dots, s_n^*)$.

¹⁶ Positing these three hypotheses makes EGT highly beneficial, as it allows us to simplify the mathematical model without sacrificing the reality of the game situation.

¹⁷ The following description of the EGT game situation is informed by Okuno & Takizawa (1996).

¹⁸ The game known as the “Prisoner’s Dilemma” is a non-cooperative non-zero-sum game. Regardless of the fact that in Table 6(a) the players would be rewarded with higher payoffs if they cooperated, they are unable to do this and choose the Pareto-inferior option (HC, HC). In terms of real accounting problems, let us look at the cases of players choosing the heretic social rule of FV: even if they are allowed to communicate and come to an agreement beforehand, players are unable to build a relationship of trust and a cooperative game does not take place.

¹⁹ Please refer to Okuno and Takizawa (1996, pp. 283-286) for a mathematical definition of an

“evolutionarily stable strategy.”

²⁰ One of the features of the current value accounting that R.R. Sterling was proposing was the emphasis on accounting statements being a so-called “faithful representation” of economic phenomena.

²¹ (3) applies to the Japanese catch-up model of institutional evolution. Please refer to Okuno and Takizawa (1996, pp. 288-293) for the EGT implications of such policies.

²² In Japan, it was not compulsory to disclose comprehensive income up until 2011. Therefore, in order to investigate the value relevance of comprehensive income on the Japanese market prior to this, it was necessary to generate an estimated comprehensive income by adding up the items corresponding to comprehensive income from within the disclosed information. This figure is known as pseudo comprehensive income.